

REMARKS

The Examiner is thanked for the due consideration given the application. The specification has been amended to insert headings.

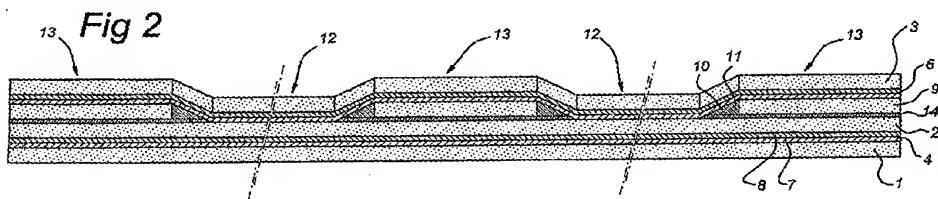
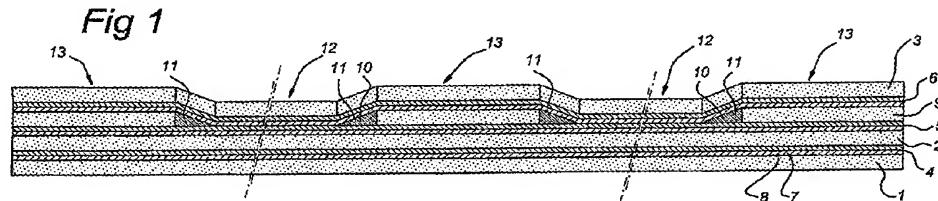
Claims 18-34 are pending in the application. The claims have been amended to improve the language in a non-narrowing fashion.

No new matter is believed to be added to the application by this amendment.

Rejection Under 35 USC §103(a)

Claims 18-34 have been rejected under 35 USC §103(a) as being unpatentable over the applicant's disclosure in view of PADDEN (U.S. Patent 5,500,272). This rejection is respectfully traversed.

The present invention pertains to a laminate that is illustrated, by way of example, in Figures 1 and 2 of the application, which are reproduced below.



Figures 1 and 2 show metal layers (1-3, 9) and plastic bonding layers (4-6) situated between the metal layers (1-3, 9). Two external metal layers (1, 3) extending substantially continuously, and there is at least one internal metal layer (2, 9). At least one of the internal metal layers (9) has at least one opening (10) and, as is set forth in claim 1, "in that at a position of the opening (10) the other metal layers (1-3) and the plastic bonding layers (4-6) are bonded together to form a packet of lower thickness."

The Official Action turns to the applicant's disclosure for teachings pertaining to laminates with other metal layers, inner metal layers and layers of resin impregnated fiber between the metal layers. The Official Action then refers to PADDEN.

Figure 3 of PADDEN (referred to in the Official Action) is reproduced below.

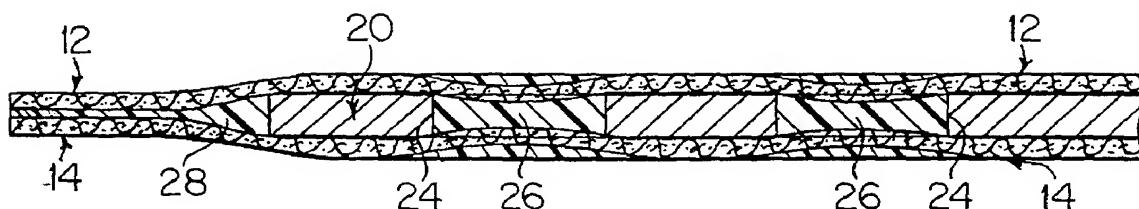


FIG. 3

Figure 3 of PADDEN is a composite laminated panel having spaced graphite/epoxy plies 12 and 14. Interleaved between the plies 12 and 14 is a titanium sheet 20. The titanium sheet 20 has a set of holes 24 while the graphite/epoxy plies extend

uninterrupted over the holes. The holes 24 in the titanium sheet allow a flow of epoxy material therethrough so as to contact confronting surfaces of the graphite/epoxy plies 12 and 14.

It is noteable that the thickness of the laminate at the location of the holes 24 is exactly the same as the thickness of the laminate around the holes 14 (see the cross-section of Figure 3).

In contrast, claim 1 of the present invention sets forth the formation of a packet of lower thickness at the position of the opening 10. This is clearly not the case in the cross-section of Figure 3 of PADDEN.

In PADDEN it appears that the epoxy/graphite plies 12, 14 bulge inward somewhat at the location of the holes 24. However, the total thickness of the laminate is not only dependent on these plies 12, 14, but also on the plugs in 24 which completely fill the holes. As a result, the laminate is completely planar at both surfaces, without any local reduced thickness. A reduced thickness would even be undesirable, in regards to the fact that additional layers are stacked upon the laminates shown in figure 1-3.

For example, Figure 5a of PADDEN (reproduced below) has eleven graphite/epoxy plies combined with a single titanium layer.

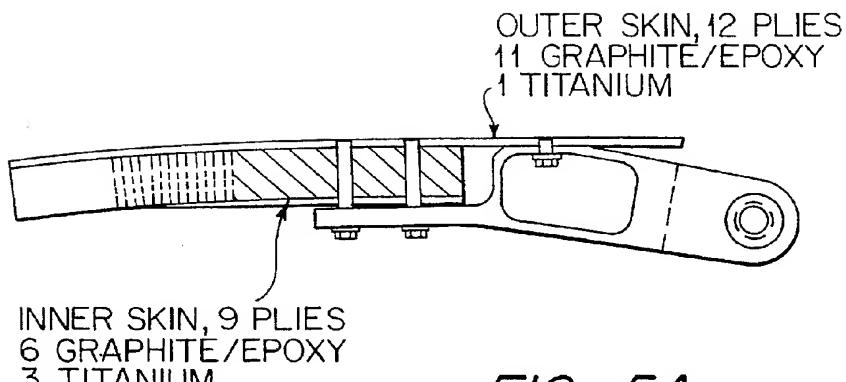


FIG. 5A

Any reduction at the location of the holes in the titanium ply would cause dents in the outer surface of such package of 11 plus 1 layers, which apparently is not the case and which would compromise the effectiveness of the structure. Moreover, no bulging shape is addressed at all in the text of PADDEN. Therefore no meaning can be contributed to this shape, which appears to occur more or less in a coincidental way.

The Official Action, however, relies heavily on this particular, non-described shape when stating in paragraph 2: "A decrease in the overall thickness occurs at the holes in the inner metal layers (Figure 3, at the area as of element 26)". As demonstrated however, and as can be clearly seen in Figure 3 of PADDEN, no decrease in overall thickness of the package of plies is present at all.

Furthermore, claim 1 of the present invention calls for two external metal layers which at the position of the opening are bonded together, so as to obtain the reduced thickness. Such external metal layers are not present in the construction

according to PADDEN, let alone that these layers would be bonded together at the opening for obtaining a reduced thickness.

This is not so surprising, when regarding the completely different goals of the present invention and PADDEN.

According to the present invention, the object is to have a panel with a relatively low weight and good mechanical properties and to provide the panel with a better behavior at the position of a local connection to frames and the like. In this regard, the relatively small thicknesses of the overall panel is maintained at the opening in the internal metal layers, while the rest of this internal metal layer provides an increased thickness at the desired location for attachment to a frame, or to a hinge for that matter

Now turning to PADDEN, the goal is exactly the opposite: it is intended to reduce the number of plies which must be present in the vicinity of an installed metal fitting yet provide sufficient bearing area for a fastener attaching the fitting to the inner and outer laminates of a bonded panel. See column 1, lines 35-39. In contrast, according to the present invention, it is an objective to increase the number of plies, in particular metal sheets, at the location of a connection.

According to PADDEN, despite the reduced number of plies, the required strength is obtained is maintained by the epoxy filled holes or plugs 26, see the explanation at column 2, lines 43-62. As stated from line 47 onwards, the holes in the

titanium sheet allow the footprint of the thin titanium sheet to be over an area sufficient in size to allow for the efficient transfer of load in the titanium to the composite fiber material of the graphite/epoxy plies without causing a weight penalty. In other words, the holes in the titanium reduce the size necessary (effective density) of the titanium sheet. Thus, the titanium sheet can be smaller due to the presence of the plugs in the holes thereof.

A perfect illustration of this reduction of the number plies is given in PADDEN at column 3, lines 6-17. First of all, reference is made to the standard method of attaching a hinge fitting to the graphite/epoxy laminated structure shown in Figure 4. Then, reference is made to the example according to PADDEN as shown in Figure 5, showing the same bearing area with interleaved titanium sheets. By using these interleaved titanium sheets, the number of plies is drastically reduced.

Additionally, the holes with plugs provide a "fail safe" gripping mechanism between the titanium sheet and the adjacent composite plies (see PADDEN at column 2 from line 55 onwards). Thereby, in case the shear bond between the confronting faces of the titanium sheet and the composite matrix plies is completely disbonded, the holes with plugs allow for a back-up load transfer path.

None of these considerations in PADDEN play any role whatsoever in the present invention.

It is additionally noted that the Official Action utilizes the applicant's own disclosure for teachings pertaining to laminates with other metal layers, inner metal layers and layers of resin impregnated fiber between the metal layers. However, this discussion in the applicant's disclosure illuminates the problem that the present invention solves.

In In re Nomiya, the CCPA determined that even if there has been an admission of prior art, this admission of prior art will still not render an invention obvious if it points out the source of the problem that the invention solves.

It should not be necessary for this court to point out that a patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is **part** of the "subject matter as a whole" which should always be considered in determining the obviousness of an invention under 35 U.S.C. 103. In re Antonson, 47 CCPA 740, 272 F.2d 948, 124USPQ 132; In re Lennert, 50 CCPA 753, 309 F.2d 498, 135 USPQ 307. The court must be ever alert not to read obviousness into an invention on the basis of the applicant's own statements; that is, we must view the prior art without reading into that art appellant's teachings. In re Murray, 46 CCPA 905, 268 F.2d 226, 122 USPQ 364; In re Sporck, 49 CCPA 1039, 301 F.2d 686, 133 USPQ 360. The issue, then is whether the teachings of the prior art would, **in and of themselves and without the benefits of the appellant's disclosure**, make the invention as a whole, obvious. In re Leonor, 55 CCPA 1198, 395 F.2d 801, 158 USPQ 20. (Emphasis in original) In re Nomiya 509 F.2d 566, 571, 184 USPQ 607, 612 (CCPA 1975).

Therefore if the applicant's disclosure is considered to be prior art, this disclosure depicts the problem that the

invention solves. These teachings therefore cannot be used to provide motivation to combine references.

If, as appellants claim, there is no evidence of record that a person of ordinary skill in the art that the time of the appellant's invention would have expected the problem . . . to exist at all, it is not proper to conclude that the invention which solves this problem, which is claimed as an improvement of the prior art device, would have been obvious to that hypothetical person of ordinary skill in the art. 184 USPQ 612, 613.

There is no motivation to combine PADDEN with the applicant's own disclosure.

Therefore, one of ordinary skill and creativity would fail to produce claim one of the present invention from a knowledge of the applicant's disclosure and PADDEN. A *prima facie* case of unpatentability has thus not been made. Claims depending upon claim 1 are patentable for at least the above reasons.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

The Examiner is thanked for considering the Information Disclosure Statement filed December 30, 2005 and for making an initial PTO-1449 form of record in the application.

Prior Art of record but not utilized believed to be non-pertinent to the instant claims.

The rejection is believed to have been overcome obviated or rendered moot, and no issues remain. The issuance of a Notice of Allowability is accordingly and respectfully solicited.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,
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